

Costs of PTC - Appendix to the Economic Team Report

Object Costs

WIU	\$40,000
Track Circuits/mile	\$15,000
Switch Monitor	\$10,000
Bridge Monitors	\$40,000
Wind Monitors	\$5,000
Defect Detector Monitor	\$10,000
Base radios	\$45,000
Yard radios	\$10,000
DGPS	\$20,000
Wayside servers	\$65,000

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PTC System Costs per Mile

Costs per Route Mile

Level	CTC	ABS	Dark
1	0 0	0	
2	\$2,890	\$4,890	\$4,890
3	\$10,890	\$12,890	\$12,890
4	\$43,070	\$45,070	\$45,070

Costs per Track Mile

Level	CTC	ABS	Dark
1	0 0	0	
2	0 0	0	
3	\$23,125	\$23,125	\$23,125
4	\$20,000	\$65,000	\$65,000

Route Mile Costs

Miles	Spacing	Unit Costs	Per Route Mile Costs
Base station radios	20	\$45,000	\$2,250
Yard Radios	250	\$10,000	\$40
DGPS	200	\$20,000	\$100
		=====	
		\$2,390	PTS Level
Bridge Monitors	2	\$80,000	\$40,000
Wind Monitors	250	\$45,000	\$180
Defect Detectors in Dark and ABS	20	\$50,000	\$2,500
Defect Detectors in CTC	20	\$10,000	\$500

Track Mile Costs

CTC	\$50,000	Switch monitor \$ +WIU
	2	Switches
	5	Miles between un-monitored switches
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	\$20,000	\$ per track mile for Switch monitors
ABS/Dark 1	\$50,000	Switch monitor \$
		Switches
	1	Miles between un-monitored switches
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	\$50,000	\$ per track mile for Switch monitors
Level 3		
	\$23,125	Wayside server + 3 WIU per eight miles

Locomotive Costs

	Unit Cost	Offset by	Adjusted Cost
	Planner		
Level 1	\$40,000	\$ 27,000	\$13,000
Level 2	\$75,000	\$ 27,000	\$48,000
Level 3	\$50,000	\$ 27,000	\$23,000
Level 4	\$75,000	\$ 27,000	\$48,000

System Development Costs

		Offset by	Adjusted Cost
	Planner		
Level1	\$ 20,000,000	\$3,000,000	\$17,000,000
Level 2	\$ 30,000,000	\$3,000,000	\$27,000,000
Level 3	\$ 40,000,000	\$3,000,000	\$37,000,000
Level 4	\$ 50,000,000	\$3,000,000	\$47,000,000

- Building databases
- Generating software
- Developing messages
- Designing communication infrastructure

Does not include train management/optimization

Locomotives 16,410

CTC	ABS	DTC		
Route miles		63,259	22,978	55,907
Track Miles		43,560	16,373	40,663

Development							
Cost	Locomotives			Costs	Total		
Level 1	\$	-	\$	-	\$	213,330,000	\$ 17,000,000 \$ 230,330,000
Level 2	\$	182,818,510	\$	112,362,420	\$	273,385,230	\$ 787,680,000 \$ 27,000,000 \$ 1,383,246,160
Level 3	\$	1,696,215,510	\$	674,812,045	\$	1,660,973,105	\$ 377,430,000 \$ 37,000,000 \$ 4,446,430,660
Level 4	\$	3,595,765,130	\$	2,099,863,460	\$	5,162,823,490	\$ 787,680,000 \$ 47,000,000 \$11,693,132,080

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